

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-49 (Canceled).

Claim 50 (Currently Amended): A multi-function image processing apparatus comprising:

- an image reader configured to read first image data;
- an image writer configured to image data onto a transcription sheet; and
- an image processing unit configured to process the first image data to second image data and transmit the second image data to the image writer,

wherein the image reader, the image writer, and the image processing unit are configured as independent, replaceable units,

the multi-function image processing apparatus is configured to perform both printing and copying functions, the image reader is configured to read data for copying functions, the image processing unit is configured to perform the image processing for both printing and copying functions, and the image writer is configured to image data on the transcription sheet for both printing and copying functions, and

- at least the image processing unit has a SIMD type processor including:
  - a parallel processing unit configured to perform parallel processing jobs using a plurality of arithmetic units configured to perform arithmetic processing on image data;
  - a data providing unit configured to provide data to the parallel processing unit;
  - an instruction providing unit configured to provide a same processing instruction to each of the plurality of arithmetic units;
  - an input unit configured to input an interruption request to interrupt a first parallel processing job performed by the parallel processing unit in favor of a second parallel

processing job, said first parallel processing job comprising a printing, copying, or facsimile job and said second parallel processing job comprising a printing, copying, or facsimile job;

a decision unit configured to determine a priority between the first parallel processing job and the second parallel processing job;

a suspending unit configured to suspend the first parallel processing job when the decision unit determines that the second parallel processing job has a higher priority than the first parallel processing job; and

a control unit configured to control the data providing unit and the instruction providing unit to provide second data to be arithmetically processed by the parallel processing unit during the second parallel processing job in place of first data to be arithmetically processed by the parallel processing unit during the first parallel processing job, and to provide a same ~~second parallel processing job~~ instruction of said second parallel processing job to each of the arithmetic units.

Claim 51 (Previously Presented): The multi-function image processing apparatus according to claim 50, further comprising:

an instruction storing unit configured to store instructions.

Claim 52 (Previously Presented): The multi-function image processing apparatus according to claim 50, further comprising:

a storing unit configured to store suspension information consisting of data and an instruction at a point of time when a parallel processing has been suspended by the suspending unit;

a detecting unit configured to detect whether interruption processing has finished or not; and

a transmission unit configured to transmit the suspension information stored by the storing unit to an original position when the detecting unit has detected a finish of the interruption processing.

Claim 53 (Previously Presented): The multi-function image processing apparatus according to claim 51, further comprising:

a program counter; and

an accumulator,

wherein the program counter assigns an instruction stored by the instruction storing unit, and each arithmetic unit carries out the arithmetic processing using the accumulator.

Claim 54 (Previously Presented): The multi-function image processing apparatus according to claim 52, further comprising:

a program counter;

an accumulator;

a first register; and

a data register configured to store data provided by the data providing unit,

wherein the suspension information consists of a program counter value, contents of the accumulator and the first register, and data stored in the data register, at a point of time when a parallel processing has been suspended by the suspending unit.

Claim 55 (Previously Presented): The multi-function image processing apparatus according to claim 52, wherein:

the storing unit stores various parameter data that are necessary for the arithmetic processing carried out by the arithmetic units.

Claim 56 (Previously Presented): The multi-function image processing apparatus recited in Claim 50 further comprising:

a facsimile control unit configured to transmit the first data read by the image reader as a facsimile image and receive facsimile image data.

Claim 57 (Previously Presented): The multi-function image processing apparatus recited in Claim 56 wherein:

the image processing unit is configured to process the facsimile image data to third data and transmit the third data to the image writer, and the image writer is configured to image the third data onto the transcription sheet.

Claim 58 (Currently Amended): A scanner comprising:

an image reader configured to read first image data; and

an image processing unit configured to process the first image data to second image data,

wherein the image reader and the image processing unit are configured as independent, replaceable units, and

at least the image processing unit has a SIMD type processor including:

a parallel processing unit configured to perform parallel processing jobs using a plurality of arithmetic units configured to perform arithmetic processing on image data;

a data providing unit configured to provide data to the parallel processing unit;

an instruction providing unit configured to provide a same processing instruction to each of the plurality of arithmetic units;

an input unit configured to input an interruption request to interrupt a first parallel processing job performed by the parallel processing unit in favor of a second parallel

processing job, said first parallel processing job comprising a printing, copying, or facsimile job and said second parallel processing job comprising a printing, copying, or facsimile job;

a decision unit configured to determine a priority between the first parallel processing job and the second parallel processing job;

a suspending unit configured to suspend the first parallel processing job when the decision unit determines that the second parallel processing job has a higher priority than the first parallel processing job; and

a control unit configured to control the data providing unit and the instruction providing unit to provide second data to be arithmetically processed by the parallel processing unit during the second parallel processing job in place of first data to be arithmetically processed by the parallel processing unit during the first parallel processing job, and to provide a same ~~second parallel processing job~~ instruction of said second parallel processing job to each of the arithmetic units.

Claim 59 (Previously Presented): The scanner according to claim 58, further comprising:

an instruction storing unit configured to store instructions.

Claim 60 (Previously Presented): The scanner according to claim 58, further comprising:

a storing unit configured to store suspension information consisting of data and an instruction at a point of time when a parallel processing has been suspended by the suspending unit;

a detecting unit configured to detect whether interruption processing has finished or not; and

a transmission unit configured to transmit the suspension information stored by the storing unit to an original position when the detecting unit has detected a finish of the interruption processing.

Claim 61 (Previously Presented): The scanner according to claim 59, further comprising:

a program counter; and

an accumulator,

wherein the program counter assigns an instruction stored by the instruction storing unit, and each arithmetic unit carries out the arithmetic processing using the accumulator.

Claim 62 (Previously Presented): The scanner according to claim 60, further comprising:

a program counter;

an accumulator;

a first register; and

a data register configured to store data provided by the data providing unit,

wherein the suspension information consists of a program counter value, contents of the accumulator and the first register, and data stored in the data register, at a point of time when a parallel processing has been suspended by the suspending unit.

Claim 63 (Previously Presented): The scanner according to claim 60, wherein:

the storing unit stores various parameter data that are necessary for the arithmetic processing carried out by the arithmetic units.

Claim 64 (Currently Amended): A printer comprising:

an image writer configured to image data onto a transcription sheet; and

an image processing unit configured to process first image data to second image data and transmit the second image data to the image writer,

wherein the image writer and the image processing unit are configured as independent, replaceable units, and

at least the image processing unit has a SIMD type processor including:

a parallel processing unit configured to perform parallel processing jobs using a plurality of arithmetic units configured to perform arithmetic processing on image data;

a data providing unit configured to provide data to the parallel processing unit;

an instruction providing unit configured to provide a same processing instruction to each of the plurality of arithmetic units;

an input unit configured to input an interruption request to interrupt a first parallel processing job performed by the parallel processing unit in favor of a second parallel processing job, said first parallel processing job comprising a printing, copying, or facsimile job and said second parallel processing job comprising a printing, copying, or facsimile job;

a decision unit configured to determine a priority between the first parallel processing job and the second parallel processing job;

a suspending unit configured to suspend the first parallel processing job when the decision unit determines that the second parallel processing job has a higher priority than the first parallel processing job; and

a control unit configured to control the data providing unit and the instruction providing unit to provide second data to be arithmetically processed by the parallel processing unit during the second parallel processing job in place of first data to be arithmetically processed by the parallel processing unit during the first parallel processing

job, and to provide a same ~~second parallel processing job~~ instruction of said second parallel processing job to each of the arithmetic units.

Claim 65 (Previously Presented): The printer according to claim 64, further comprising:

an instruction storing unit configured to store instructions.

Claim 66 (Previously Presented): The printer according to claim 64, further comprising:

a storing unit configured to store suspension information consisting of data and an instruction at a point of time when a parallel processing has been suspended by the suspending unit;

a detecting unit configured to detect whether interruption processing has finished or not; and

a transmission unit configured to transmit the suspension information stored by the storing unit to an original position when the detecting unit has detected a finish of the interruption processing.

Claim 67 (Previously Presented): The printer according to claim 65, further comprising:

a program counter; and

an accumulator,

wherein the program counter assigns an instruction stored by the instruction storing unit, and each arithmetic unit carries out the arithmetic processing using the accumulator.



Claim 68 (Previously Presented): The printer according to claim 66, further comprising:

a program counter;

an accumulator;

a first register; and

a data register configured to store data provided by the data providing unit,

wherein the suspension information consists of a program counter value, contents of the accumulator and the first register, and data stored in the data register, at a point of time when a parallel processing has been suspended by the suspending unit.

Claim 69 (Previously Presented): The printer according to claim 66, wherein:

the storing unit stores various parameter data that are necessary for the arithmetic processing carried out by the arithmetic units.

Claim 70 (Currently Amended): A multi-function image processing apparatus comprising:

an image reader configured to read first image data, said image reader including at least one processor;

an image writer configured to image data onto a transcription sheet, said image writer including at least one processor;

an image processing unit configured to process the first image data to second image data and transmit the second image data to the image writer, said image processing unit including at least one processor; and

a facsimile control unit configured to transmit the first data read by the image reader as a facsimile image and receive facsimile image data, said facsimile control unit including at least one processor,

wherein said multi-function image processing apparatus is configured to operate a ~~plurality of jobs~~ first parallel processing job comprising a printing, copying, or facsimile job and a second parallel processing job comprising a printing, copying, or facsimile job by having a processor of one of said image reader, said image writer, said image processing unit, and said facsimile control unit operating said first parallel job and a processor of one of said image reader, said image writer, said image processing unit, and said facsimile control unit operating said second parallel job, said first and said second parallel processing jobs operating on processors of different ones of said image reader, said image writer, said image processing unit, and said facsimile control unit at a same time, said printing job is operated by the image processing unit then the image writer, said copying job is operated by the image reader, then the image processing unit, then the image writer, an incoming facsimile job is operated by the facsimile control unit, then the image processing unit, then the image writer, and an outgoing facsimile job is operated by the image reading unit, then the image processing unit, and then the facsimile control unit in parallel, said jobs comprising printing, copying, and/or facsimile jobs, the image reader is configured to read data for copying and facsimile functions, the image processing unit is configured to perform the image processing for printing, copying, and facsimile functions, and the image writer is configured to image data on the transcription sheet for printing, copying, and facsimile functions, and

said at least one processor of the image processing unit includes ~~has~~ a SIMD type processor including:

a parallel processing unit configured to perform parallel processing jobs using a plurality of arithmetic units configured to perform arithmetic processing on image data;

a data providing unit configured to provide data to the parallel processing unit;

an instruction providing unit configured to provide a same processing instruction to each of the plurality of arithmetic units;

an input unit configured to input an interruption request to interrupt said ~~[[a]]~~ first parallel processing job performed by the parallel processing unit in favor of said ~~[[a]]~~ second parallel processing job, ~~said first parallel processing job comprising a printing, copying, or facsimile job and said second parallel processing job comprising a printing, copying, or facsimile job;~~

a decision unit configured to determine a priority between the first parallel processing job and the second parallel processing job;

a suspending unit configured to suspend the first parallel processing job when the decision unit determines that the second parallel processing job has a higher priority than the first parallel processing job; and

a control unit configured to control the data providing unit and the instruction providing unit to provide second data to be arithmetically processed by the parallel processing unit during the second parallel processing job in place of first data to be arithmetically processed by the parallel processing unit during the first parallel processing job, and to provide a same ~~second parallel processing job~~ instruction of said second parallel processing job to each of the arithmetic units.

Claim 71 (Previously Presented): The multi-function image processing apparatus according to claim 70, further comprising:

a system controller and a process controller configured to allocate usage of the image reader, the image writer, and the image processing unit among the plurality of jobs operating in parallel.